

## **ROUGE RIVER AOC HABITAT RESTORATION - PHOENIX LAKE**

**Project Funding Request:** \$1,424,625

### **PROJECT ABSTRACT**

The Rouge River watershed is a designated AOC under the Great Lakes Water Quality Agreement (GLWQA) and has three Beneficial Use Impairments (BUIs) associated with fish and wildlife habitat: Degraded Fish and Wildlife Populations, Degradation of Benthos, Loss of Fish and Wildlife Habitat. The Rouge River Advisory Council (RRAC), the Public Advisory Council (PAC) for the Rouge AOC, approved, in March 2016, a list of projects that need to be completed in order to remove the Rouge AOC habitat BUIs. As part of that list, the restoration of Phoenix Lake will have a significant impact on the removal of the BUIs. The Phoenix Lake Habitat Improvement project will result in 4 acres of improved lake habitat and 5.0 acres of invasive species control.

### **PROBLEM STATEMENT**

Grant funding is requested for the Rouge River Area of Concern (AOC) Phoenix Lake Habitat Improvement Project as part of the efforts to delist the Rouge River AOC. The Rouge River watershed is a designated AOC under the Great Lakes Water Quality Agreement (GLWQA) and has three Beneficial Use Impairments (BUIs) associated with fish and wildlife habitat: Degraded Fish and Wildlife Populations, Degradation of Benthos, Loss of Fish and Wildlife Habitat.

During the last century, the Rouge River has suffered from declining water quality and increased flood conditions, primarily due to increasing urbanization within the watershed. The flat river slope and the meandering channel could not pass the large flows associated with major precipitation events. Upstream urbanization continued to exacerbate this problem due to increased amounts of impervious surfaces culminating in floods within downstream local communities. Water quality in recent years, though, has improved since 1992 thanks to the federally-funded Rouge Project. For example, 89 of the 127 miles of the larger streams and tributaries in the watershed are now free from public health threats associated with uncontrolled combined sewer overflow discharges. Water quality improvement is exhibited by increased dissolved oxygen levels needed to sustain fish and aquatic life. Increased populations and diversity of benthos, fish and wildlife have been measured along the river since 1999. Also, the U.S. EPA Office of Inspector General declared the Rouge Project "a blueprint for success" (EPA OIG report number 2002-P-00012).

Many of the previously completed reports [Ex: Habitat Delisting Targets (2008), Rouge River Delisting Strategy (2012), Upper Rouge Delisting Strategy (2012), and Rouge River BUI Report Card (2013)] listed project types, in addition to specific projects, that needed to be completed in the watershed to remove the Habitat BUIs and delist the AOC have been implemented. The USEPA, EGLE, MDNR, RRAC, ARC, FOTR and local members began facilitating the development of the formal list for removal of the Habitat BUIs in 2015. This work resulted in the development of a final Rouge AOC Habitat list that was approved by EGLE in March 2018. On that list was the Phoenix Lake Habitat Improvement project, which was considered by EGLE, MDNR and EPA to be a top priority project.

Phoenix Lake is an artificial impoundment located along the Middle Branch of the Rouge River. Located in Plymouth Township, Michigan, it serves as a recreational site for fishing and small watercraft use, as well as flood control during large rain events. These types of reservoirs contain beneficial habitats for fish and other aquatic species, for uses such as spawning nursery, forage, and cover from predation. If not maintained, these uses and processes within reservoirs can be reduced or even eliminated through increased sediment loads, shoreline destabilization due to rapidly fluctuating water levels, or destruction of riparian habitat through urbanization. This project will maintain and restore the ecosystem functions that Phoenix Lake provides. This project involves Wayne County as a major landowner/partner. This project activity will

design, permit and implement the Rouge River AOC's Phoenix Lake Habitat Improvement project

Relevance to Existing Restoration Plans and Priorities - The proposed project responds directly to multiple plans and priorities within the Rouge River AOC:

- The Rouge RAP Advisory Council's *2016 Rouge River Remedial Action Plan Habitat Projects List* identifies these activities as a top priority for delisting the Rouge River AOC.
- The Rouge River Watershed Management Plan, prepared by the ARC, recognizes river and lake habitat restoration as a key factor in the watershed's restoration.
- Activities respond to the *Great Lakes Regional Collaboration Strategy* focus on "Riverine Habitats and Related Riparian Areas" and its long-term goals including conservation of rivers and sustaining native/migratory fish and aquatic biota/wildlife.

The Phoenix Lake Habitat Improvements project has been identified as a priority project within the Rouge River AOC to address the habitat and population-related, and eutrophication and undesirable Algae beneficial use impairments (BUIs) as approved by the Rouge River Advisory Council (RRAC). This project would consist of the following restoration elements:

- Restoration of the aquatic benthic substrates, submerged and emergent aquatic vegetation, and riparian habitat. The addition of new substrates would include sandy gravels, cobbles, and boulder clusters in strategic locations that would provide spawning substrate, attachment points, and cover for fishes, aquatic insects, crustaceans, and other aquatic fauna. Native submerged, emergent, and floating aquatic vegetation will be planted in shallow water littoral zone areas around the lake to create lacustrine wetland habitat for waterfowl feeding, fish spawning and nursery habitat, and nutrient sequestration within the Phoenix Lake.
- Woody debris in the form of felled trees along the shoreline and wood cribs placed offshore will increase habitat diversity and provide cover for forage fish and spawning fish, basking sites for waterfowl and turtles, and attachment surfaces for aquatic insects. In addition to wood debris, boulder clusters will be added off-shore to add cover for spawning fish that spawn in deeper water, cover for small fish, and feeding areas for adult fish.
- Native fish will be stocked to accelerate the restoration of a balanced game fish and forage fish assemblage within the lake following dredging and habitat construction. This would include stocking favorable sport fish species such as largemouth and smallmouth bass, various sunfish species, black crappie, northern pike, and channel catfish. Naturally occurring forage fish within the Rouge River would be stocked to create a strong and sustainable forage base for adult fish and wading birds.
- Invasive species management will be conducted within the current vegetative corridor (approximately 50-foot on the north and south shorelines). This corridor will be adjusted once field investigation of defined the corridor extent has been conducted. Target invasive species include buckthorn, honeysuckle, autumn and Russian olive, privet, Siberian elm, tree of heaven, and garlic mustard. In addition, dead ash will be harvested to create room for new native trees. Some dead ash and elm trees will be kept to provide snag habitat for birds, mammals, bats, and other animals that use them. Some dead ash trees will also be felled and left on the forest floor to provide habitat for small woodland mammals and salamanders.

#### Outputs

- 4.0 Acres of restoration/enhanced lake habitat
  - 0.5 acres of sand/gravel/cobble fish spawning habitat
  - 1.5 acres of vegetation plantings
  - 2.0 acres of fish and herpetofauna habitat (woody debris, boulder clusters, various substrates)
- 5.0 acres of invasive species control

*Great Lakes Restoration Initiative Action Plan III*, Measures of Progress (MoPs) for the overall project when implementation is completed are:

- **Focus Area 2: Invasive Species** - Objective 2.2. Control established invasive species.
  - 2.2.1. Aquatic/terrestrial acreage controlled: 5 acres of invasive species management
- **Focus Area 4: Habitats and Species** - Objective 4.1. Protect and restore communities of native aquatic and terrestrial species important to the Great Lakes
  - 4.1.1. Acres of coastal wetland, nearshore, and other habitats restored, protected, or enhanced: 9 acres of habitats (includes the 5 acres of invasive species management)